

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of processing data including (i) structured image data including document-image data and corresponding positioning data therein indicating a starting coordinate and a size of the document-image data, and (ii) region data indicating a structure of the document-image data, the processing method comprising the steps of:

a) determining whether to divide a region of the document-image data to be divided according to ~~predetermined~~ dividing information that indicates whether a data amount of said region is subject to reduction;

b) dividing the region of the document-image data being an element into plural ~~portions~~ sub-elements having a tree-structure with the element and having respective starting coordinates and sizes of the document-image data if according to the region to be divided in step a) is determined to be subject to dividing;

c) processing in a memory individually the ~~portions of the document-image data~~ sub-elements to control-reduce a data an-amount of the document-image data based on respective kinds of data of the sub-elements;

d) renewing the structured image data by replacing the positioning data and the document-image data before processing with positioning data and document-image data after the processing; and

e) outputting the renewed structured image data.

2. (Currently Amended) The method of claim 1, wherein the dividing information includes data indicating a region in which ~~that affect~~ a difference between the document-image data after a color-subtracting process and the document-image data before the color-subtracting process ~~so that the difference is~~ smaller than a predetermined value.

3. (Currently Amended) The method of claim 1, wherein the dividing information includes score data added to at least one of the positioning data and the region data, and the region to be divided is indicated based on the score data.

4. (Currently Amended) The method of claim 1, wherein the dividing information includes (i) score data, (ii) a transmit capacity of a transmitting path for transmitting the structured image data, and (iii) an user's request showing how fast the user requires data, which are added to at least one of the positioning data and the region data, and the region to be divided is determined based on the dividing information so that data amount of the structured image data is controlled to a target amount of data.

5. (Currently Amended) A method of processing data, the data including (i) structured image data including document-image data and corresponding positioning data therein indicating a starting coordinate and a size, (ii) region data indicating a structure of the document-image data, and (iii) replaced media dividing information added to the region data, the processing method comprising the steps of:

a) determining, in a memory, whether to divide a region of the document-image data ~~to be divided~~ according to the replaced media dividing information that indicates whether a data amount of a region is subject to reduction;

b) dividing the document-image data into plural portions, which having respective starting coordinates and sizes according to the replaced media dividing information;

c) replacing the document-image data divided according to the replaced media dividing information that is added to the region data corresponding to the divided document image;

d) renewing the structured image data by replacing the positioning data, the document-image data, and the replaced media dividing information; and

e) outputting the renewed structured image data.

6. (Previously Presented) The method of claim 5, wherein the replaced media dividing information is formed by text data added to a region.

7. (Currently Amended) A method of processing data including first input data including (i) first structured image data including first document-image data and corresponding positioning data indicating a starting coordinate and a size thereof, and (ii) first region data indicating a structure of the first document-image data by regions, and second input data that includes (i) second structured image data including second document-image data and corresponding positioning data indicating a starting coordinate and a size thereof, and (ii) second region data indicating a structure of the second document-image data by regions, the second input data being different than the first input data, the processing method comprising the steps of:

a) determining in a memory whether to divide a region of the first input data, which overlaps with a region included into the second input data, to be divided, as a region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

b) dividing the region of the first document-image data into plural portions including respective starting coordinates and sizes if according to the region of the first input data to be divided in step a) is determined to be subject to dividing;

c) renewing the first structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

d) combining the renewed first structured image data with the second structured image data, as combined structured image data; and

e) outputting the combined structured image data.

8. (Currently Amended) A method of processing data, the data including first input data that includes (i) first structured image data including first document-image data and first positioning data indicating a starting coordinate and a size thereof, (ii) first region data indicating a structure of the first document-image data by regions, and (iii) first score data added to at least one of the first positioning data and the first region data; and second input data that includes (i) second structured image data including second document-image data and second positioning data indicating a starting coordinate and a size thereof, (ii) second region data indicating a structure of the second document-image data by regions, and (iii) second score data added to at least one of the second positioning data and the second region data, the second input data being different than the first input data, the processing method comprising the steps of:

a) determining in a memory whether to divide a region of the first input data, which overlaps with a region included into the second input data, to be divided, as a

region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

b) dividing the first document-image data into plural portions, which overlaps with a region included into the second input data, ~~according to if~~ the region of the first input data in step a) is determined to be subject to dividing~~to be divided~~;

c) renewing, if the second score data corresponding to the overlapped region is the first score data, the structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

d) combining the renewed first structured image data with the second structured image data, as combined structured image data, ~~using the first and second score data~~; and

e) outputting the combined structured image data.

9. (Currently Amended) An apparatus for processing data including (i) structured image data including document-image data and corresponding positioning data therein indicating a starting coordinate and a size of the document-image data, and (ii) region data including a starting coordinate and a size thereof indicating an inner structure of the document-image data, the apparatus comprising:

a divided region determining unit to obtain dividing information that indicates whether a data amount of said region is subject to reduction and to determine a region of the document-image data according to ~~predetermined~~the dividing information;

an image-dividing unit to divide the region of the document-image data being an element into plural ~~portions~~sub-elements having a tree-structure with the element and having respective starting coordinates and sizes if ~~according to the~~ region of the document-image data ~~to be divided~~is determined to be subject to dividing;

an image processing unit to process individually the divided ~~portions~~sub-elements of the ~~document-image data~~element to ~~control an~~ reduce a data amount of the document-image data based on respective kinds of data of the sub-elements;

a structured image renewal unit to renew the structured image data by replacing the positioning data and the document-image data before processing with positioning data and document-image data after processing; and

an outputting unit to output the renewed structured image data.

10. (Currently Amended) The apparatus of claim 9, wherein the dividing information includes data indicating a region in which~~that affect~~ a difference between the document-image data after a color-subtracting process and the document-image data before the color-subtracting process ~~so that the difference is~~ smaller than a predetermined value.

11. (Currently Amended) The apparatus of claim 9, wherein dividing information includes score data added to at least one of the positioning data and region data, and the region to be divided is indicated based on the scored data.

12. (Currently Amended) The apparatus of claim 9, wherein the dividing information includes (i) score data, (ii) a transmit capacity of a transmitting path for transmitting the structured image data, and (iii) an user's request showing how fast the user requires data, which are added to at least one of the positioning data and the region data, and the

region to be divided is determined based on the dividing information so that data amount of the structured image data is controlled to a target amount of data.

13. (Currently Amended) An apparatus for processing data including (i) structured image data including document-image data and corresponding positioning data therein indicating a starting coordinate and a size thereof, (ii) region data indicating a structure of the document-image data, and (iii) replaced media dividing information added to the region data, the apparatus comprising:

a divided region determining unit to determine whether to divide a region of the document-image data to be divided according to the replaced media dividing information that indicates whether a data amount of said region is subject to reduction;

an image-dividing unit to divide a region of the document-image data into plural portions indicating respective starting coordinates and sizes according to ~~if~~ the region of the document-image data ~~to be divided~~ is determined to be subject to dividing;

a replacing unit to replace the divided document-image data with the replaced media dividing information that is added to the region data corresponding to the divided document image; and

a structured image renewal unit to renew the structured image data by replacing the positioning data, the document-image data, and the replaced media dividing information; and

an outputting unit to output the renewed structured image data.

14. (Previously Presented) The apparatus of claim 13, wherein the replaced media dividing information is formed by text data added to a region.

15 (Currently Amended) An apparatus for processing data including first input data that includes (i) first structured image data including first document-image data and corresponding positioning data including a starting coordinate and a size thereof, and (ii) first region data indicating a structure of the first document-image data by regions; and second input data composed of (i) second structured image data including second document-image data and corresponding positioning data indicating a starting coordinate and a size thereof, and (ii) second region data indicating a structure of the second document-image data by regions, the second input data being different than the first input data, the apparatus comprising:

a divided region determining unit to determine whether to divide a region of the first input data , which overlaps with a region included into the second input data, to be divided, as a region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

an image-dividing unit to divide the region of the first document-image data into plural portions including respective starting coordinates and sizes according to if the region of the first input data ~~to be divided~~is determined to be subject to dividing;

a structured image data renewal unit to renew the first structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

a structured image data composition unit to combine the renewed first structured image data with the second structured image data, as combined structured image data; and

an outputting unit to output the combined structured image data.

16. (Currently Amended) An apparatus for processing data including first input data that includes (i) first structured image data including first document-image data and first positioning data indicating a starting coordinate and a size thereof, (ii) first region data indicating a structure of the first document-image data by regions, and (iii) first score data added to at least one of the first positioning data and the first region data; and second input data that includes (i) second structured image data including second document-image data and second positioning data including a starting coordinate and a size thereof, (ii) second region data indicating a structure of the second document-image data by regions, and (iii) second score data added to at least one of the second positioning data and the second region data, the second input data being different than the first input data, the apparatus comprising:

a score-attached divided region determining unit to determine a score-attached region of the first input data, which overlaps with a region included into the second input data, to be divided, as a region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

an image-dividing unit to divide the first document-image data into plural portions, which overlaps with a region included into the second input data, according to the score-attached region of the first input data to be divided;

a structured image data renewal unit to renew, if the second score data corresponding to the overlapped region is the first score data, the first structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

a score-attached structured image data composition unit to combine the renewed first structured image data with the second structured image data, as combined structured image data, ~~using the first and the second score data~~; and

an outputting unit to output the combined structured image data.

17. (Currently Amended) A computer program product for processing data, the data including (i) structured image data including document-image data and corresponding positioning data therein indicating a starting coordinate and a size of the document-image data, and (ii) region data indicating a starting coordinate and a size thereof indicating an inner structure of the document-image data, the program product comprising:

a program code for determining whether to divide a region of the document-image data to be divided according to ~~predetermined~~ dividing information that indicates whether a data amount of said region is subject to reduction;

program code for dividing the region of the document-image data being an element into plural ~~portions~~ sub-elements having a tree-structure with the element and having respective starting coordinates and sizes according to ~~if~~ the region of the document-image data ~~to be divided~~ is determined to be subject to dividing;

program code for processing individually the portions of the document-image data to control an amount of the document-image data based on respective kinds of data of the sub-elements;

program code for renewing the structured image data by replacing the positioning data and the document-image data before processing with positioning data and document-image data after processing; and

program code for outputting the renewed structured image data.

18. (Currently Amended) The computer program product of claim 17, wherein the dividing information includes data indicating a region in which ~~that affect a~~ difference between the document-image data after a color-subtracting process and the document-image data before the color-subtracting process ~~so that the difference is~~ smaller than a predetermined value.

19. (Currently Amended) The computer program product of claim 17, wherein the dividing information includes score data added to at least one of the positioning data and the region data, and the region to be divided is indicated based on the scored data.

20. (Currently Amended) The computer program product of claim 17, wherein the dividing information includes (i) score data, (ii) a transmit capacity of a transmitting path for transmitting the structured image data, and (iii) an user's request showing how fast the user requires data, which are added to at least one of the positioning data and the region data, and the region to be divided is determined based on the dividing information so that data amount of the structured image data is controlled to a target amount of data.

21. (Currently Amended) A computer program product for processing data, the data including (i) structured image data including document-image data and corresponding positioning data therein including a starting coordinate and a size, (ii) region data indicating an inner structure of the document-image data, and (iii) replaced media dividing information added to the region data, the program product comprising:

program code for determining whether to divide a region of the document-image data to be divided according to the replaced media dividing information that indicates whether a data amount of said region is subject to reduction;

program code for dividing the document-image data into plural portions including respective starting coordinates and sizes according to the region of the document-image data to be divided;

program code for replacing the divided document-image data with the replaced media dividing information added to the region data corresponding to a divided document image;

program code for renewing the structured image data by replacing the positioning data, the document-image data, and the replaced media dividing information; and

program code to output the renewed structured image data.

22. (Previously Presented) The computer program product of claim 21, wherein the replaced media dividing information is formed by text data added to a region.

23. (Currently Amended) A computer program product for processing data including first input data that includes (i) first structured image data including first document-image data and corresponding positioning data indicating a starting coordinate and a size thereof, and (ii) first region data indicating a structure of the first document-image data by regions; and second input data that includes (i) second structured image data including second document-image data and corresponding positioning data indicating a starting coordinate and a size thereof, and (ii) second region data indicating a structure of the second document-image data by regions, the second input data being different than the first input data, the program product comprising:

program code for determining whether to divide a region of the first input data, which overlaps with a region included into the second input data, to be divided, as a region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

program code for dividing the first document-image data into plural portions including respective starting coordinates and sizes according to the region of the first input data to be divided;

program code for renewing the first structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

program code for combining the renewed first structured image data with the second structured image data, as combined structured image data; and

program code for outputting the combined structured image data.

24. (Currently Amended) A computer program product for processing data including first input data that includes (i) first structured image data including first document-image data and first positioning data showing a starting coordinate and a size thereof, (ii) first region data indicating a data structure of the first document-image data by regions, and (iii) first score data added to at least one of the first positioning data and the first region data; and second input data that include (i) second structured image data including second document-image data and second positioning data including a starting coordinate and a size thereof, (ii) second region data indicating a data structure of the second document-image data by regions, and (iii) second score data added to at least

one of the second positioning data and the second region data, the second input data being different than the first input data, the program product comprising:

program code for determining whether to divide a region of the first input data, which overlaps with a region included into the second input data, to be divided, as a region to be ~~renewed~~divided, so as to reduce a data amount thereof, by referring to the second input data;

program code for dividing the first document-image data into plural portions, which overlaps with a region included into the second input data, according to the region of the first input data to be divided;

program code for renewing if the second score data corresponding to the overlapped region is the first score data, the structured image data of the first input data according to the divided first document-image data and further positioning data corresponding to the divided first document-image data;

program code for combining the renewed first structured image data with the second structured image data, as combined structured image data, ~~using the first and second score data~~; and

program code for outputting the combined structured image data.

25. (Currently Amended) A method for processing a bit map image of a document, the method comprising:

producing in a memory tree-structured data corresponding to the document according to the bit map image document;

dividing the bit map of the document into plural regions based on the tree-structured data;

calculating in a memory respective amounts of data of the plural regions to obtain dividing information indicating one or more of the plural regions of which amount of data is subject to reduction;

replacing a portion of the tree-structured data to replace one or more of the plural regions of the bit map image of the document based on the dividing information;
and

outputting the ~~bit-map~~tree-structured data having the replace one or more regions.